

COAL FATAL

1957-0240

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

DISTRICT I

REPORT OF MULTIPLE FATAL COAL OUTBURST ACCIDENT
MARY HELEN NOS. 2 AND 3 MINES
MARY HELEN COAL CORPORATION
COALGOOD, HARLAN COUNTY, KENTUCKY

October 18, 1957

By

J. L. Gilley
Mining Health and Safety Engineer

and

R. B. Jones
Federal Coal-Mine Inspector (Roof Control)

Originating Office - Bureau of Mines
Barbourville, Kentucky
G. W. Parry, Subdistrict Supervisor
Barbourville, Kentucky Subdistrict, Health and Safety District I

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INTRODUCTION

(105) A coal-mine bump (outburst) at 8:45 p.m., Friday, October 18, 1957, in the Mary Helen Nos. 2 and 3 mines, Mary Helen Coal Corporation, Coalgood, Harlan County, Kentucky, resulted in instant death to Calvin Hensley, loading-machine operator's helper, and injured Virgil Daniels, loading-machine operator, so seriously that he died 30 minutes later. Johnny Mitchell, shuttle-car operator, who was only a few feet outby the line of the stress wave or forces, was stunned momentarily, but was otherwise uninjured. The violence of the bump forced the loading machine outward and sidewise about 13 feet from its position along the rib of the coal pillar from which coal was being loaded. Portions of the victims' bodies were underneath the loading machine. Hensley, age 42, with 20 years mining experience, the last 6 months as a loading-machine operator's helper, is survived by his widow and 4 dependent children. Daniels, age 41, with 15 years mining experience, the last 6 months as a loading-machine operator, is survived by his widow and 2 dependent children.

The Bureau of Mines was notified of the occurrence immediately following the accident, and an investigation was made October 19, 1957.

GENERAL INFORMATION

The Mary Helen Nos. 2 and 3 mines of the Mary Helen Coal Corporation, at Coalgood, Kentucky, were opened by drifts in the Harlan coal bed, which averaged 42 inches in thickness in the areas being mined. A total of 172 men was employed, of which number 150 worked underground on 2 shifts a day. The average daily production of 1,200 tons of coal was loaded by mobile loading machines into shuttle cars. The mines are classed nongassy.

The mines were developed by a room-and-pillar method; pillars, most of which were of unequal dimensions, were being extracted in the section where the outburst occurred. Main and cross entries were driven in sets of 3 and room entries were driven in sets of 2 or 3 at intervals of about 600 feet. Entries were driven 16 feet or more in width on 60-foot centers and rooms 20 feet or more in width on 80-foot centers, and slabbing of pillars for passageways was practiced. Crosscuts were driven 60 to 90 feet apart. (State permit).

The immediate and the main roof in the vicinity of the accident is fine-grained massive sandstone, 25 feet or more in thickness. The floor is hard dense shale but locally heaves more or less readily under the excessive pressures encountered.

The depth of the cover over the 11 right 5 face area is about 1,600 feet. The irregular crest of the mountain range on this property has elevations in excess of 3,500 feet. •

The adopted method of roof support required posts on 4-foot centers along the roadways, safety posts to be set close to the working faces, and crossbars to be set where needed. Also, spot bolting (4 bolts at each location) was done supplemental to the conventional plan of timbering.

The pillars in the immediate area where the outburst occurred were not being mined individually by proper extraction methods nor in proper sequence as indicated in sketch No. 2 of this report. Furthermore, it will be noted that two pillars of coal had been left unmined in by the affected pillar, reportedly, because about 75 inches of draw rock was coming with the coal, leaving about a 100-foot span between the affected pillar and the unmined pillar. These two unmined pillars probably prevented the massive sandstone from caving as it should, and thus imposed additional stress on the unmined pillars. The natural conditions existing in these mines, such as the character of the coal, the roof, and the floor, and the depth of the overburden are factors which favor outbursts in coal mines, especially in highly stressed areas.

The floor of the crosscut between Nos. 2 and 3 rooms had heaved to some extent, and it was decided that a new roadway be made by slabbing along the crosscut side, as indicated in sketch No. 1 appended hereto. It was planned to drive this new roadway until it intersected the No. 3 room and then turn 90° left and drive an open-end lift adjacent to the No. 3 room to the inby end of the pillar. However, when the new roadway adjacent to the crosscut was completed, a definite lift across the back side was not made as planned; instead 45° angle lifts were mined off the pillar until the rib was in the position as shown on the sketch at the time of the accident. This condition resulted in mining coal into the highly stressed area of the block, and when a free face was available the stored energy was released instantaneously with violence.

Although accidents of this nature had not occurred in this section, numerous coal outbursts have occurred in these mines.

Information for this report was obtained from an examination at the scene of the accident and from company officials and employees.

The investigating committee consisted of:

Mary Helen Coal Corporation

W. M. Gravatt, Jr.	Vice President
Morton Dudley	Assistant General Manager
William Lint	Superintendent
G. R. Metcalf	Mine Foreman
W. J. Simonton	Chief Engineer
Garrett Long	Second-Shift Section Foreman
Tad Lockhart	Day-Shift Section Foreman
Pearl Baumgardner	Faceman
R. L. Chitwood, Sr.	Cutting-Machine Operator
Johnny Mitchell	Shuttle-Car Operator

United Mine Workers of America

Robert Reeder	Safety Committeeman
R. L. Chitwood, Jr.	Safety Committeeman

Bituminous Casualty Company

W. M. Charles	Inspector
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Kentucky Department of Mines and Minerals

Otis Cox	Inspector-in-Charge
Rufus Bailey	Inspector
Matt Wilder	Inspector
Carl Smithers	Inspector

United States Bureau of Mines

G. W. Parry	Subdistrict Supervisor
J. L. Gilley	Mining Health and Safety Engineer
H. E. Basinger	Federal Coal-Mine Inspector
R. B. Jones	Federal Coal-Mine Inspector (Roof Control)

1957. The last previous Federal inspection was completed September 16,

DESCRIPTION OF ACCIDENT

The accident occurred along a pillar rib between Nos. 2 and 3 rooms, 11 right, 5 face. The 11 right section crew, including the victims, entered the mine at 3:45 p.m., and arrived on the section at 4:15 p.m. The crew loaded 15 cars of coal from the No. 1 pillar while the mining-machine crew was cutting the No. 2 pillar, the place where the accident occurred. The loading machine was brought into the No. 2 pillar and started to load coal at approximately 5:30 p.m. About 25 cars of coal had been loaded from the No. 2 pillar when the loading-machine operator trammed the machine back along the shuttle-car roadway to load the coal spillage.

The loading-machine crew was greasing the machine when the shuttle car returned to the place from the discharge terminal and after finishing the lubrication job, they began loading the shuttle car. The car was about half loaded when the bump occurred. Approximately 12 tons of coal was thrown from the rib, and the stress was sufficiently intense to force the loading machine about 13 feet from its original position, catching Daniels and Hensley underneath the machine, as indicated in sketch No. 1. Johnny Mitchell, the shuttle-car operator, was stunned and thrown from the control deck of the car by the force of the outburst; however, he was not injured. The section foreman, who was at the loading ramp when the bump occurred, stated that he visited the No. 2 pillar about 7:15 p.m., and observed no unusual conditions that indicated an impending outburst. The foreman, with the help of the other crew members, lifted the loading machine with jacks and released the victims about 10:00 p.m.

* Roof was not shaken down nor were timbers knocked out by the bump in the active areas, but the roof opened up at several tension cracks (jointing planes) on about S-80°-W, which is near the angle of the coal cleavage planes, and the original line of extraction. The cracks extended through the bump area, thence into the No. 1 pillar place and into the gob. A large cave occurred several hours after the outburst in the mined-out areas inby the affected pillar. A dense cloud of dust was reported to have been thrown into suspension by the outburst. Damage to property was confined to the bump area where considerable damage was done to the loading machine, and the trailing cable was severed near the machine. *

CAUSE OF ACCIDENT

A violent coal outburst from an over-stressed pillar, which resulted from failure to remove the coal from pillars according to the adopted plan of pillar recovery was the direct cause of the accident.

RECOMMENDATIONS

Compliance with the following recommendations may prevent accidents of a similar nature:

1. Pillars should be recovered in the proper sequence and in a straight and orderly manner so as to reduce the possibility of offset pillar lines, pillar line points, or points projecting into gobs.
2. Pillar recovery sections should be projected and developed so that the pillars will, as far as practical, be of the same size so that each pillar will bear an equal amount of overburden weight or stresses.
3. Pillars should always be recovered by open-end lifts. The lifts should be driven so that each lift and adjacent consecutive lifts will be made along the gob side of the pillars. Only one lift should be made in a pillar at a time and should be driven only sufficiently wide to accomodate the equipment and to provide adequate roof support. Pillars on or near the line of extraction should not be split.
4. Every effort should be made to obtain full recovery of pillars so that pillars or stumps will not be left unmined to impede or prevent the roof from caving in worked-out areas.
5. The adopted mining plans and practices should be complied with at all times.

ACKNOWLEDGMENT

The cooperation of employees, mine officials, and State and Insurance inspectors is gratefully acknowledged.

Respectfully submitted,

/s/ J. L. Gilley

J. L. Gilley
Mining Health and Safety Engineer

/s/ R. B. Jones

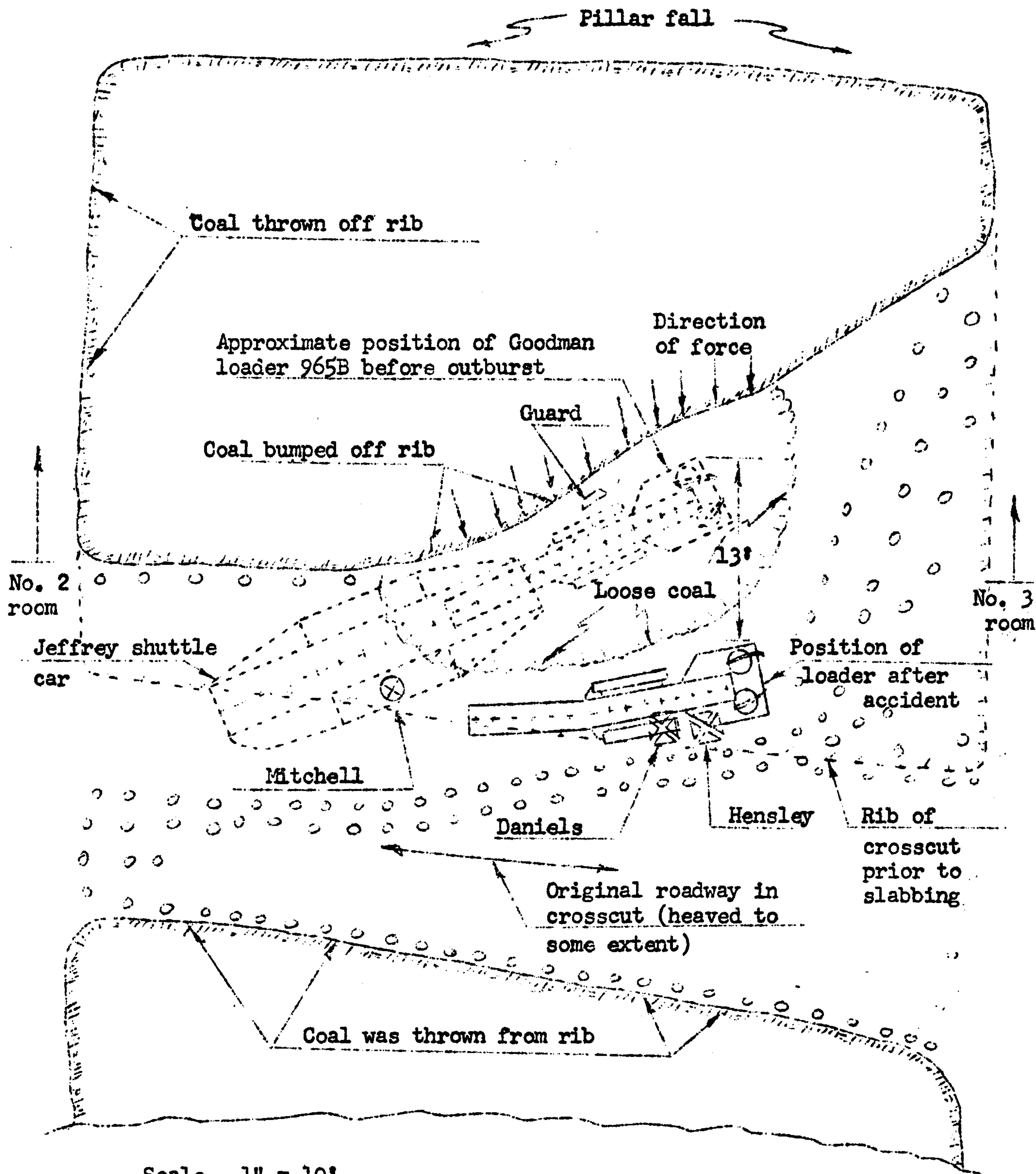
R. B. Jones
Federal Coal-Mine Inspector
(Roof Control)

FATAL ACCIDENT DATA

1. Name of victim: Calvin Hensley
2. Mine: Mary Helen Nos. 2 and 3 Company: Mary Helen Coal Corporation
Location: Coalgood, Harlan County, Kentucky
3. Daily employment: 172 Time of accident: October 18, 1957 8:45 p.m.
4. General location of accident: No. 2 pillar 11 right - 5 face
5. Job when injured: Loading-machine operator's helper Regular job: Same
6. Age 42 Years experience: Regular job 6 months In mines 20 years
7. Dependents: Widow X Number of children under age 18 4 Others None
8. Method of loading in place where accident occurred: Mechanical

FATAL ACCIDENT DATA

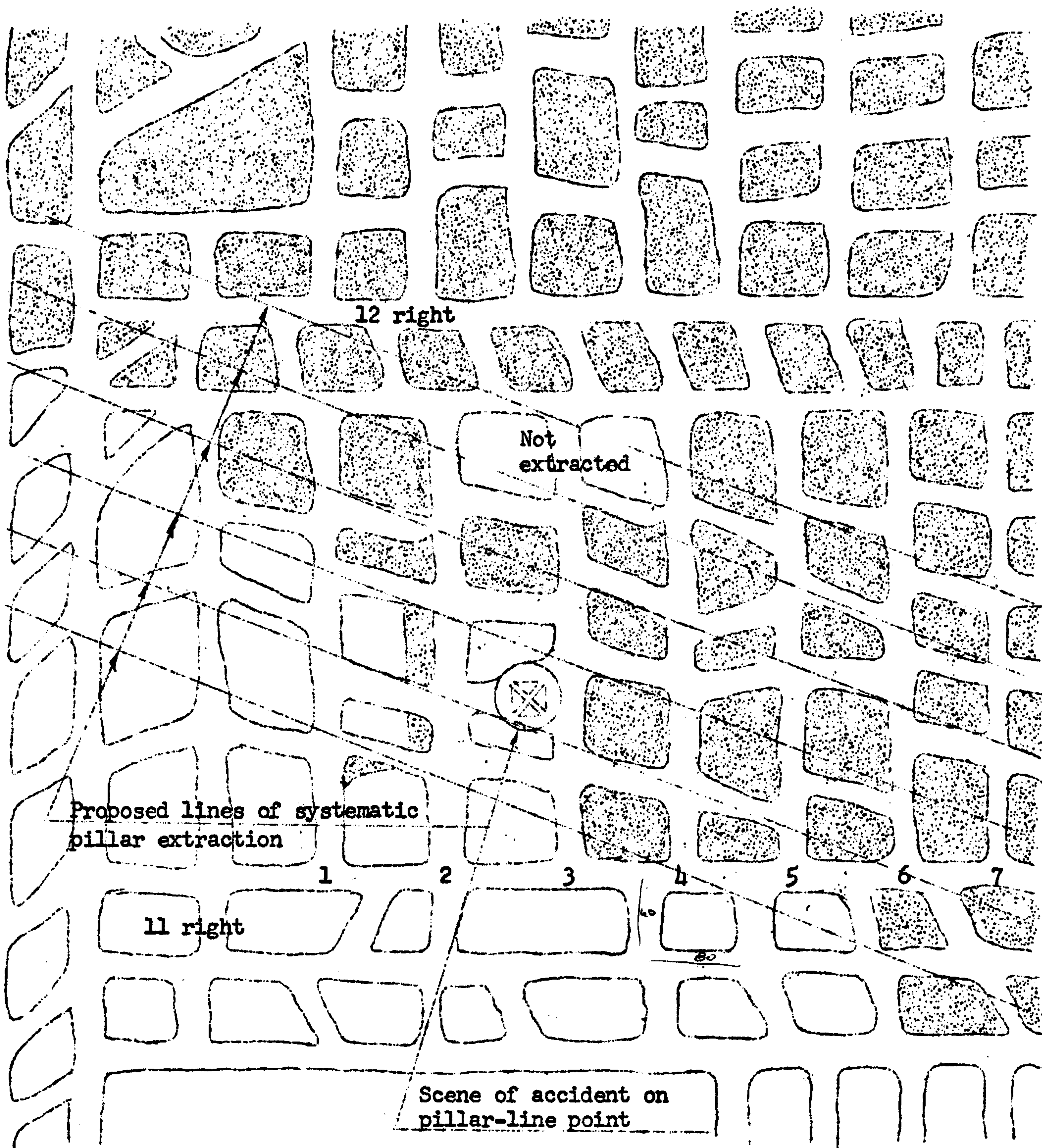
1. Name of victim: Virgil Daniels
2. Mine: Mary Helen Nos. 2 and 3 Company: Mary Helen Coal Corporation
Location: Coalgood, Harlan County, Kentucky
3. Daily employment: 172 Time of accident: October 18, 1957 8:45 p.m.
4. General location of accident: No. 2 pillar 11 right - 5 face
5. Job when injured: Loading-machine operator Regular job: Same
6. Age: 41 Years experience: Regular job 6 months In mines 15 years
7. Dependents: Widow X Number of children under age 18 2 Others None
8. Method of loading in place where accident occurred: Mechanical



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SKETCH NO. 1



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SKETCH NO. 2